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New Job Matches and Their Stability before and during the Crisis

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Abstract

Using administrative data from the Spanish Social Security Administration, we analyse the nature and stability of job matches starting during the economic boom in 2005 and during the recession in 2009. We compare the individual, job and firm characteristics in the two samples and estimate a competing risk model distinguishing job-to-job, job-to-unemployment, and other transitions. We find that job-to-job transitions are pro-cyclical, while unemployment transitions are counter-cyclical. Individuals most affected by the economic crisis tend to be young males, living in regions with high unemployment rates, with low qualifications and working in manual occupations (particularly construction), and (especially Spanish speaking) immigrants. The positive relation between job stability and firm size is stronger during the recession than during the boom.

Keywords: Job tenure; Business cycle; Job-separations
JEL classification: J64, C41, E32

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1 Introduction

The Great Recession has led to important adjustments in the labour market of most developed countries and has dramatically affected the Spanish labour market, which exhibits higher job destruction and lower job creation rates than other European countries. The goal of the Europe 2020 Strategy[1] "to create *more* and *better* jobs," emphasizes the necessity of assessing the nature and quality of new jobs over time. We contribute to this by studying the changing nature of new job matches over the business cycle. An important indicator of the quality of a match is job duration: better matches typically last longer. Accordingly, the 2015 country report for Spain of the European Commission emphasizes promotion of stable employment as an important challenge.[2]

During the downturn, the demand for labour falls, the number of voluntary job leavers typically falls, and the number of unemployed workers rises. Added and discouraged worker effects and migration will affect labour supply. The negative consequences of increasing unemployment are well known. The decline in job-to-job transitions is also a concern, since it may reduce efficiency of the labour market and productivity growth or affect working conditions (Lentz and Mortensen, 2005). During the downturn, lower expectations of workers may reduce job-to-job transitions, but the decline in expected productivity raises the number of layoffs and shortens job tenure.

We extend the scarce literature on cyclical fluctuations in the nature of new job matches, analysing matches starting in 2005 and 2009 and decomposing the changes in stability of new matches into variation in their composition and (residual) changes induced by changing economic conditions. The observation window for both samples is three years, capturing periods of expansion (2005-2007) and recession (2009-2011). The data we use come from the Longitudinal Working Lives Sample, based upon administrative records from the Spanish Social Security Administration. It contains detailed information on employment and unemployment transitions and individual and job characteristics.

[1] http://ec.europa.eu/europe2020/index_en.htm
[2] http://ec.europa.eu/europe2020/pdf/csr2015/cr2015_spain_en.pdf

A new job match can be a new labour market entry, any new job after an unemployment or non-participation spell, or a change to a new employer.[3] The job can be completely new or can be left by a previous worker – our data do not allow disentangling these. We first analyse how individual and job characteristics vary between new job matches in the two samples. Then we investigate how these characteristics determine the exits ending the new matches, distinguishing transitions to another job (with a different employer), to unemployment with benefit receipt, and to any other destination. We estimate Mixed Proportional Hazard (MPH) Models, allowing for dependence among unobserved heterogeneity components of the three hazards, using a discrete distribution with three points of support.

Explanatory variables include individual and job characteristics and regional unemployment. We particularly focus on differences between large and small establishments. It is well known that larger firms have lower turnover (Haltiwanger et al., 2015), but there exist opposing views on how firms of different size respond to the business cycle. The policy relevance seems obvious. Government policies that stimulate starting a new firm to create employment have been criticized because the stability of new jobs at small firms is often inferior, and these policies can hamper firm growth (Shane, 2009). In the Spanish policy debate, it has been suggested that larger firms are necessary to increase penetration in foreign markets, productivity, and stable employment (e.g., Pérez, 2014).

The remainder of this paper is organized as follows. Section 2 presents a brief review of the literature. Section 3 describes the data. Section 4 presents the characteristics and job exit patterns of new matches. Section 5 introduces the econometric framework. Section 6 provides the main results. Section 7 concludes.

2 Literature review

In this section we briefly discuss the literature on the composition of new matches over the business cycle and the cyclical fluctuations in job stability.

[3] When an employee gets a different job but stays with the same employer, this is defined as a continuing spell and not as a job change.

The nature of new job matches over the business cycle

For the US, Devereux (2002) examines how the educational composition of new matches within a given occupation changes over the business cycle. He found that less skilled workers have more pro-cyclical job finding rates. Devereux (2004) showed that new matches result in lower quality jobs in recessions than in booms and that part of the wage pro-cyclicality in new matches can be attributed to variation in match quality over the business cycle. Similarly, van Ours and Ridder (1995), using Dutch data on unemployed workers, found that jobs obtained in recessions are less attractive.

Eurofound (2013) described the net employment evolution for EU countries before, during and after the 2008-2010 recession, disaggregating by worker characteristics and employment status. They found that groups hit hardest by the crisis are young and male workers, those with low education, and those with temporary contracts. The industries with most job destruction are manufacturing and construction. They also pointed at the persistence of longer-term trends, like higher expansion in high-skilled employment, qualitative and quantitative improvement in female employment, and strong growth in part-time work and self-employment.

For Spain, De la Roca (2014) found that the sensitivity of wages for the economic cycle declines with tenure and, accordingly, is highest for newly hired workers. Font el al. (2015) showed that real wages are pro-cyclical, particularly for young and newly hired workers and for workers with fixed-term contracts. Rocha and Aragón (2012) pointed out an increase between 2008 and 2012 in the concentration of employment in very large and very small firms. They also showed that construction and manufacturing are the sectors with most job destruction during the crisis, affecting mainly young, male, low-skilled, and immigrant workers. García-Serrano (2012) investigated the evolution of employment at sector and occupational level for the period 1985-2011, emphasizing the strongly pro-cyclical nature of the Spanish construction sector compared to other European countries.

2.2 Cyclicality of the durations of new jobs

The importance of job stability is well-established in the literature. From a worker's perspective, job duration influences future prospects, like development of

human capital, wage levels and benefit entitlements (Keith and Mc Williams, 1995). From an employer's perspective, separation rates determine policies on, e.g., human capital investment, promotions, and wages (Hirsch and Schnabel, 2012). There is little empirical work on the changes in the stability of new matches over the business cycle. For young males in the US, Bowlus (1995) found that mismatching occurs more often during recessions. Many studies have focused on changes over time in mean job tenure in countries with different levels of employment protection (for references, see Boockmann and Steffes, 2010), but these studies focused on secular changes rather than cyclicality.

Studies on the determinants of job stability usually include controls for economic conditions. Boockman and Steffes (2010) incorporated institutional and historical variables. Most of these studies distinguish several destination states (e.g., Boockmann and Steffes, 2010; Hirsch and Schnabel, 2012), reasons for job termination (Booth et al., 1999) or both (Bergmann and Mertens, 2011). For Germany, Dütsch and Struck (2014) found that firm investments in training and internal promotion opportunities (typically taking place in larger firms) foster employment stability, while the opposite happens if fixed-term contracts are used extensively.

For Spain, García-Pérez (1997) and García-Perez and Muñoz-Bullón (2005) studied patterns and determinants of transitions into and out of employment. The latter study emphasized the role of Temporary Help Agencies. Arranz and García-Serrano (2004) explored the influence of previous labour market experience on exit rates by reason for termination (end of a contract and layoff). Blázquez-Cuesta (2008) distinguished job separations by destination states (other job and non-employment) for the period 1995-2001, with special attention for low paid workers.

According to the theory of labour market segmentation, large establishments tend to create circumstances that foster employment stability. Several empirical studies based on individual level data confirm that job exit rates are significantly lower in larger firms (e.g., Bergmann and Mertens, 2011; Blázquez-Cuesta, 2008; Dütsch and Struck, 2014). On the other hand, studies using linked employer-employee data (Boockmann and Steffes, 2010; Hirsch and Schnabel, 2012) found that rather than firm size itself, factors correlated with firm size matter, like the presence of works councils or unions,

availability of further training, and the amount of firm specific technology. Stuck (2006) demonstrated that some characteristics of large firms help to enhance employment stability, like more training opportunities, job flexibility, promotion possibilities, and opportunities to adjust the production process to economic shocks. This study also suggests that job stability would suffer less from the crisis in large than in small firms.

Still, the literature on the role of firm size leads to ambiguous conclusions. One strand, starting with Gertler and Gilchrist (1994), argued that small businesses are more sensitive to cyclical economic shocks than larger firms, due to stronger credit constraints. Sharpe (1994) found that small firms more easily lay off workers during a recession but do not hire faster during an expansion. Davis and Haltiwanger (2001) and Fort et al. (2013) found that in industries with many young workers, small firms are more sensitive to cyclical credit market shocks. The opposite argument is based on the greater ability of large firms to increase employment in the expansion period and their greater need to lay off workers during the downturns. This prediction stems from the dynamic models of Moscarini and Postel-Vinay (2012, 2013) and is supported by the evidence of Kahn and McEntarfer (2014). Fort et al. (2013) point out that some of the contradicting empirical findings are due to how cyclical indicators and shocks are measured.

Shane (2009) argued that the jobs created in small firms are often unstable and not productive and proposed to eliminate barriers for firm growth, like lower taxation or subsidies for small firms, and stimulate firm growth companies, through, e.g., R&D tax credits. Accordingly, the European Commission pointed at the policy challenge to support firm creation while at the same time stimulating firm growth. Pérez (2014) emphasized that the number of new firms in Spain is similar to that in other countries, but these new firms are small, have low survival chances, and do not create permanent employment.

3 Data

The data we use come from the Longitudinal Working Lives Sample[4] (LWLS), based upon administrative records from the Spanish Social Security Administration (SSA). It is collected annually since 2004 and contains information on a 4% random sample of the population (approximately one million people) who ever had any relationship with SSA[5] in the sample period, as contributor or benefit recipient. Individuals in the 2004 LWLS remain in the sample as long as they have a relationship with SSA, making it possible to analyse labour market changes over time. LWLS provides rich information on individual, firm and job characteristics such as firm size, sector of activity, annual wages and type of contract.

To compare the expansion and recession periods, we constructed two samples with job spells (excluding self-employment) starting in 2005 and in 2009, observing the workers in the new match until the end of the job spell or the observation period - 31 December 2011 for the 2009 data and set to 31 December 2007 for the 2005 data (to increase comparability). This is achieved by merging the data sets LWLS 2005-2006-2007 and LWLS 2009-2010-2011.

The selection of the estimation sample is described in detail in Appendix Table A2. For instance, our samples are restricted to workers aged 16 to 53 (in 2005 or 2009), avoiding exits through early retirement. Moreover, following De la Roca (2014), we only include job spells lasting more than 31 days to exclude all irregular jobs, e.g. jobs involving piecework. Our final samples consist of 170,143 individuals starting 210,001 new job spells in 2005 and 137,276 employees with 161,951 new jobs spells in 2009. The difference between sample sizes reflects the substantial drop in the number of new jobs matches. The average number of new job matches per individual drops from 1.26 to 1.21, mainly because workers who exit from their new job less often get a new job within the three years observation window (see below).

To understand our definition of unemployment, some more institutional background is necessary.[6] The Spanish unemployment benefit system covers wage workers (excluding civil servants and domestic employees) who lost their job, are willing

[4] We use the LWLS version with fiscal data.
[5] Civil servants are not included.
[6] For more details see, e.g., Toharia et al. (2010).

to work and have contributed to the Social Security System for some minimum period. There are two levels of protection: contributory (Unemployment Insurance Benefit, UIB) and assistance (Unemployment Assistance Benefits, UAB). UIB covers unemployed workers who contributed at least 12 months in the last six years preceding unemployment. UAB is means-tested with minimum period of contribution three months in the last six years. Our data set does not follow individuals who neither receive UIB or UAB benefits nor contribute premiums. This implies that we cannot disentangle unemployed workers without benefits and non-participants such as homemakers or emigrants. Thus the destination states we distinguish are: finding another job (with a different employer or in self-employment), unemployment with benefits, or non-employment including unemployment without benefits.[7] See Table 1 for details.

Consecutive job spells with the same employer are considered as one job spell, with the characteristics of the first contract. Job duration is defined as the difference (in days) between the termination and starting dates of the job. If at the end of the observation period the employee is still working for the same employer, the spell is right censored.

4 Characteristics of new job matches before and during the crisis

New job matches are the result of the interaction of job searchers and firms. The business cycle may lead to changes in the pool of job searchers and the job assignment process, shifting the sample composition of new job starters. Table 2 compares descriptive statistics of individual and job characteristics of new job starters in the two years. The importance of the crisis is reflected in the substantial growth of the average regional unemployment rate. During the recession period, the proportion of younger individuals (16-29 years old) in new matches decreases, in line with the notion that in a context of excess supply of labour, employers hire more experienced workers (Devereux, 2004).

The drop in the fraction of males (from 54% in 2005 to 51% in 2009) may be due to an added worker effect, or to the overrepresentation of males in declining sectors

[7] When defining the destination state, we discard spells of at most 31 days, as for new job matches. This avoids, for example, including unemployment spells intended to bridge short periods when firms temporarily fire people.

(manufacturing and construction). While the proportion of Spanish natives in new matches declined from 89% in 2005 to 85% in 2009, the proportion of non-Spanish speaking immigrants rose from 6% to 10%, possibly due to excessive job loss among these immigrants. The distribution of education level of the new matches remains stable, as well as the proportion in non-manual occupations.

The job characteristics we consider relate to sector of activity, type of contract, establishment size,[8] and daily salary. Most workers who started a new job in 2005 did it in the services sector (71%); the proportions in manufacturing and construction fell from 11% to 8% and from 18% to 15%, respectively. This fits with the pro-cyclical nature of the construction sector and the decrease in industrial employment during recessions (García-Serrano, 2012). In 2005, 9% of new job matches are in sectors with a high level of technology; this fell to only 3% during the recession. A large proportion of new employees got a job in a microenterprise (1-9 workers, not including self-employed): 30% in 2005 and 35% in 2009. This increase might be influenced by government policy: From 2009 (and until 2015) there was a tax deduction for creating or maintaining employment for firms with less than 25 employees and total net turnover below €5million per year.[9]

The majority of the new contracts are temporary, about 74% in both periods. Open-ended contracts are especially set up for seasonal activities, allowing for interruptions due to seasonality. They are used in about 3% (5%) of the new jobs in 2005 (2009). The average part-time coefficient decreased substantially because the proportion of part-time contracts rose from 22% to 28%. The fraction of new jobs signed through Temporary Help Agencies (THA) acting as an intermediary, declined from 4% in 2005 to 3% in 2009, possibly because THA contracts are more common for younger and low-qualified workers, groups that are hired less often in 2009.

[8] To be precise, this variable is based upon the firm identifier in the data. Establishments in different provinces always have different identifiers, but establishments in the same province may have the same identifier, in which case establishment size refers to all establishments with the same identifier. Given the firm size distribution (90% of firms are small or medium-sized and more than 50% of all workers work in companies with less than 50 workers) this does not seem a major issue.

[9] Spanish Budget Act 2010 Ley26/2009, art. 77 and Additional Provisions 27. The increase in the share of microenterprises is largest in construction (from 42% to 56%).

The proportion of new hires in the public sector (excluding civil servants) has increased from 8% in 2005 to 10% in 2009, due to employment creation in education and health.

To sum up, the changes in sample composition reveal interesting facts that are in line with previous studies: first, the marked sectorial character of this crisis and the dramatic reduction in new hires in high technology jobs. Second, the growth of the share of hires in micro-enterprises during the crisis. Third, the countercyclical nature of part time jobs.

Job exits before and during the crisis

The fraction of job separations over the total observation window is high in both periods: 77% of the new matches in 2005 and 82% in 2009 ended within three years. This reveals the importance of the job turnover in the Spanish labour market (Dolado et al. 2002). It appears to be driven by two opposite processes: the pro-cyclical nature of transitions to other jobs (29% in 2005 and 18% in 2009) (and, to a much lesser extent, to non-employment - 33% in 2005 and 30% in 2009),[10] and the counter-cyclical nature of job-to-unemployment rates (16% in 2005 and 34% in 2009). The aggregate job-to-any-exit hazard (not shown) combines these distinct outflows correlating and is hard to interpret without considering the separate hazards by destination state. Kaplan Meier estimates of the hazard rates presented in the Appendix (Figure A1) show that hazard rates are negatively associated with job tenure, particularly for exits to unemployment.

5 Econometric model

We use a competing risk model[11] treating the duration of each new job spell as a continuous random variable, since durations are measured in days. A spell can end with a transition to another job *(j=1)*, unemployment with benefits *(j=2)*, or non-employment *(j=3).* This gives the total hazard

$$h(t) = h_1(t) + h_2(t) + h_3(t) \qquad (1)$$

[10] Women's job-to-non-employment transitions exceed men's in both periods, suggesting that this destination includes exits to unpaid work as homemaker. The crisis reduces these transitions in a similar way for both groups.
[11] For the a competing risks framework, see, e.g., Kalbfleisch and Prentice (2002, Chapter 8).

Here $h(t)$ is the aggregate hazard to any destination state at job tenure *t,* and $h_1(t)$, $h_2(t)$ and $h_3(t)$ are the hazards for the competing exits. Conditional on observed and unobserved heterogeneity, competing risks are assumed to be independent. We specify the following Multivariate Mixed Proportional Hazard (MMPH) model with hazards $h_j(t|X_i(t), V_i^j)$ *j=1,2,3,* of individual *i* conditional on observed characteristics $X_i(t)$ and unobserved characteristics V_i^j given by:

$$h_j(t|X_i(t), V_i^j) = h_0^j(t) \cdot \exp(X_i(t)'\beta^j) \cdot \exp(V_i^j) \quad (2)$$

The baseline hazards $h_0^j(t)$, *j=1,2,3*, are specified as piecewise constant, allowing for flexible duration dependence (using mainly quarterly cut-points):

$$h^j{}_0(t) = \bar{h}^j{}_k \; t \in (\tau_{k-1}, \tau_k), k = 1, \dots, K \quad (3)$$

The parameters of main interest are the vectors $\beta^j, j = 1,2,3$. A positive coefficient in β^j of a covariate implies that, conditional on other covariates and unobserved heterogeneity, an increase of the covariate increases the probability of exit *j.* A way to interpret the size of the coefficients is through the percent change in the hazard produced by a one unit change in the covariate, $(e^{\beta_j} - 1) \cdot 100$.

Ignoring unobserved heterogeneity may lead to biased estimates of β and spurious negative duration dependence (Nickell, 1979). Following Heckman and Singer (1984), we use discrete frailty and allow the unobserved heterogeneity terms V_i^1, V_i^2 and V_i^3 to be correlated: The population consists of *K* subpopulations with different risks; the *K* population fractions are unknown parameters[12] p_k, *k = 1, …, K,* with $\sum_{k=1}^{K} p_k = 1$; *K* is also the number of mass points of the distribution of $V_i \;\; = (V_i^1, V_i^2, V_i^3)$.

We assume that unobserved heterogeneity is constant over time (within and across spells of the same individual) and independent of observed characteristics, the standard assumption in this kind of duration models (Van den Berg, 2001). Moreover, we need to impose the normalization $E(V_i^j) = 0, j = 1,2,3$.

[12] To ensure that probabilities are between zero and one and sum to one, we assume $p_k = \frac{\exp(a_k)}{(1+\sum_{l=1}^{K-1}\exp(a_l))}$ $k = 1, .., K$, with a_k=1.

All parameters are estimated jointly by Maximum Likelihood. The likelihood function is the product of the Likelihood contributions L_i of all individuals *i*. L_i can be written as the expected value of the conditional likelihood given (V_i^1, V_i^2, V_i^3): $L_i = \sum_{k=1}^{K} P_k \cdot L_i(V^k)$, where $L_i(V^k)$ is the conditional likelihood contribution given(V_i^1, V_i^2, V_i^3) is equal to the k^{th} mass point $V^k = (V_k^1, V_k^2, V_k^3)$. $L_i(V^k)$ is identical to a standard likelihood contribution in a model without unobserved heterogeneity, including the conditional density function for the observed exits of completed spells and the conditional survival function for right-censored spells:

$$L_i(V^k) = \prod_{j=1}^{3} \prod_{s=1}^{S} h_s^j\,(t_i|X_i(s), V_j^k)^{d_{i,j,s}}\; S_s^j\left(t_i\middle|X_i(s), V_j^k\right) \qquad (4)$$

Here *s=1,…,S* are the spells of individual *i*, and $d_{i,j,s}$ is a dummy that is 1 if spell *s* ends in a transition of type *j* and 0 otherwise. Our Stata code used for ML for estimation is largely based upon the Stata code of Bijwaard (2014).

6 Estimation results

Table 3 presents the estimates of competing risk models for each sample. In line with the literature, explanatory variables include individual and job characteristics and the state of the labour market. The best likelihood is obtained using a discrete unobserved heterogeneity distribution with three mass points. In the discussion, we focus on the main differences between the estimates for the two samples (almost all differences between parameter estimates for the two samples are significant different; see note Table 3).

Regional unemployment rate

An important determinant of job stability is the quarterly regional unemployment rate. Local unemployment is positively correlated with transitions into unemployment, in line with findings of García-Pérez (1997) and Arranz and García-Serrano (2004), and negatively with exits to other jobs. The effects of the unemployment rate are substantially smaller for the 2009 sample than for the 2005 data, but due to the much higher unemployment rates in 2009, the average elasticity of transitions to unemployment for the regional unemployment rate has increased, from 0.22 to 0.27. The elasticity of the job-to-job hazard for the local unemployment rate has changed

from -0.25 to -0.15. An explanation could be the finding of Sala and Trivín (2014) that people become more willing to migrate when a regional shock occurs in worse economic circumstances, since this would make them less sensitive to the economic situation in their own region. On the other hand, this is contradicted by De la Roca and Puga (2016) who concluded that migration *across urban areas* had remained very stable since 1998 through bad and good times, but plummeted in the Great Recession. Our regional unemployment rate refers to the region (17 regions in total) where the individual is living and combines rural and urban areas.

Demographics

Gender differences in job stability fell during the crisis. In particular, men in the 2005 sample were much less likely to become unemployed compared to otherwise similar women, in line with, e.g., findings of Arranz and García-Serrano (2004). This advantage shrunk substantially in 2009 (from 25% to 11%). Men also more often switched jobs, especially in the expansion period (7.8% more than women). During the economic boom, women were more likely (4.9%) to exit to non-employment, but this difference disappeared in 2009, perhaps because fewer women gave up their job due to the unemployment risk of their husband.

Age patterns are qualitatively similar for the two samples and in line with Blázquez-Cuesta (2008), who found that transitions to another job or non-employment are more likely among young workers. The younger age groups of 16-29 year olds seem to be hit hardest by the crisis in terms of an increase in the probability of unemployment, although their chances to become unemployed remain lower than those of the age group 50 - 65.

Immigrants more often switch jobs and have fewer transitions to unemployment than natives during the expansion, but for Spanish speaking immigrants, the difference in the hazard to unemployment vanishes during the downturn. Job-to-job switching for both groups of immigrants fell during the recession, becoming similar to that of natives. Immigrants show more transitions to non-employment than natives in both periods, probably due to return migration. Specifically Spanish speaking immigrants have

suffered from the recession, with the largest fall in job-to-job transitions and the largest increase in the probability to become unemployed.

A higher education level reduces the probability to become unemployed in both periods. The difference between primary and lower secondary education is significant during the crisis only. This is in line with the theory predicting that during the crisis, firms fire easily replaceable low educated employees. During the crisis, job switching increased with education level, suggesting that firms prefer recruiting higher educated workers. Thus the least educated workers seem the most adversely affected by the crisis, in terms of both less job switching and higher chances of unemployment.

Job characteristics

Establishment size is interacted with sector to allow for different patterns in services, construction and manufacturing. The estimates show a common pattern in the two periods across industries and destinations, implying that job stability increases with firm size,[13] in line with findings of Blázquez-Cuesta (2008) for the period 1995-2001. Larger firms generally invest more in hiring and provide better working conditions, leading to higher separation costs for both employers and employees. In contrast, small firms often offer short-term jobs due to fewer opportunities for internal labour market adjustment.

The three sectors were affected differently by the crisis. The burst of the housing bubble severely hit the construction sector, where workers suffered a substantial increase in the probability to become unemployed. This change varied with establishment size. In 2005, workers in construction had the lowest probability to become unemployed irrespective of establishment size, but in 2009 this probability was higher than in other sectors for workers in small or medium-size establishments. Small and medium-size establishments also had the largest fall in job switching. Perhaps the increase of activities abroad limited the negative effect of the recession for larger firms.

Workers in manufacturing suffered less from the crisis than construction workers. While workers in small manufacturing companies got higher chances to

[13] There is one exception: in 2005 the probability to become non-employed in services slightly decreases with establishment-size.

become unemployed, the opposite occurred for establishments with more than 50 employees. The slight decrease in job-to-job transitions was uniform across establishment sizes. For workers in the services sector, the chances of job switching fell particularly strongly in larger establishments.

Jobs in sectors with more intensive technology where human capital accumulation is more relevant, show lower incidence of unemployment and non-employment, but higher job switching in both periods. Non-manual workers had more stable jobs than manual workers, with lower hazards to all destinations in both periods, particularly to unemployment. Arranz and García-Serrano (2004) found that non-manual workers have a lower probability of job termination than manual workers due to temporary contracts.

Public sector workers are less likely to change jobs but more likely to become unemployed than comparable private sector employees. These differences are reduced during the crisis.

Following Blázquez-Cuesta (2008), we also consider the wage level as a job characteristic.[14] Its influence on separation rates differs between the two periods. Workers with higher wages exhibit higher job switching, especially in the downturn, and higher chances to become unemployed during the expansion period. In contrast to our results, Arranz and García-Serrano (2004) found a disincentive effect of wages on the hazard rate for involuntary job termination (layoff and end of temporary contract) for the period 1987-1997; they did not include characteristics of the current job such as type of contract, industry, firm size or part-time coefficient. Alba et al. (2012) suggest that the positive relationship between earnings and the unemployment hazard during the boom might be due to strategic use of unemployment benefits.

Workers with a higher part-time coefficient have higher job switching and unemployment risk, especially in 2005, but a much lower probability to exit into non-employment in both periods.[15]

[14] Since information about hours worked is not available we cannot compute hourly wages but use the daily wage. The possible bias this induces (already mentioned by Arranz and García-Serrano, 2012) is mitigated by including the part-time coefficient as an explanatory variable.

[15] The parameter estimates reflect the effects on the hazards keeping other characteristics constant, including the daily wage. The effects keeping the hourly wage constant are obtained by adding the corresponding coefficient on the log daily wage. This would, e.g., also imply a (small) positive effect on unemployment risk in 2009.

Unobserved heterogeneity

In the competing risks estimations, unobserved heterogeneity is significant in both periods, demonstrating the importance of unobserved characteristics such as motivation, effort, social pressure, etc. for the chances to remain in the same job. According to the estimated discrete distribution, the correlation between the unobserved heterogeneity terms changes over the business cycle. The most interesting one is the significant correlation between job-to-job and unemployment hazards, which is 0.84 in 2005 and 0.36 in 2009. This implies that someone who is likely to become unemployed also has higher chances of exiting to another job, particularly during the expansion period. This could point at the strategic use of unemployment benefits during the expansion period.

Baseline Hazards

Figure 1 shows the estimated survival and hazard functions for a benchmarck person. Observed and unobserved heterogeneity are controlled for through the covariates and frailty terms, so that slopes can be interpreted as true state dependence. The top panel shows, for instance, that in the benchmarck group in 2005, 46% would move to another job within 1 year, 20% would become unemployed and 58% non-employed, so that the probability of ending the current job would be 82% ((1-0.56*0.78*0.59)*100). In 2009, the probability to switch to another job has fallen by 17.6% points, while the probability to become unemployed has increased by 19% points and the likelihood to become non-employed has slightly increased. Adding up these three, the bechmarck group's probability to end the job remains virtually constant, in line with the flat separation pattern over the business cycle found by Bachman (2005). Correspondingly, while the overall median job duration (not shown) was approximately six months in both periods, the median job duration would increase from 13 to 22 months if job switching were the only exit, while it would fall from 26 to 15 months if unemployment were the only exit (and from 9 to 8 months if non-employment were the only exit).

The bottom panel shows the corresponding hazard rates. For job switching and transitions to unemployment, we find positive duration dependence during the first 18 months of employment which is stronger in exits to unemployment in 2009 and in job switching in 2005. After 18 months, duration dependence turns negative. These patterns might be explained by job matching theory: hazard rates increase at the start of the spell since employers and employees learn about the match quality; later on job exits decline and good matches survive. In 2005, the job separation process is often an employee decision, since workers have alternatives for poor matches. In 2009 job separations are more often driven by employer decisions, while workers are willing to remain in any match due to the lack of alternative job oportunities. The initially increasing pattern of the job-to-unemployment hazard may also be explained by the lower number of workers entitled to unemployment benefits after a very short period of contribution (see the benefit entitlement rules in Section 3).

Decompositions

Table 4 shows the results of decomposing the difference between the survival probabilities after 360 days in the periods before and during the crisis, in the spirit of, e.g., Verho (2014). The first rows give the average survival probabilities for the two samples according to the model estimates[16] and the difference between these two. For example, according to the competing risk model the average probability of not switching to another job (assuming no other exit possibilities) was 68.9%, increasing to 79.7% in the 2009 sample, a difference of 10.7 percentage points. In contrast, the probability of not becoming unemployed decreased substantially from 82.2% to 63.9%. The average probability of not exiting to non-employment increased only slightly from 57.0% in 2005 to 59.0% in 2009.

The remaining rows show the decomposition of these differences. First, we take the 2005 estimates and the 2005 regional unemployment rates, but compute the average probabilities for the new job starters in the 2009 sample. Comparing with the 2005 probabilities in row 3 gives the composition effect: the part of the difference

[16] Here, for simplicity, the time-varying variables (age, daily wage, regional unemployment rate) are kept constant over time and set to their values at the start of the job spell.

explained by the fact that individual and job characteristics in the 2009 and 2005 samples are different.

Despite the significant changes in the sample characteristics found in section 4, the composition effect explains only 24% and 11% of the substantial changes in the survival probabilities for job switching and unemployment, respectively. The reason is that positive and negative contributions to the composition effect largely cancel. For example, the increase in the share of jobs in very small firms contributes to explaining the increase in the hazard into unemployment, but the increasing number of non-Spanish speaking immigrants works in the opposite direction.[17]

7 Conclusions

We have analysed the nature of new job matches in Spain starting in 2005 and 2009, before and during the recent recession. The data reveal substantial variation over the business cycle in the characteristics of both workers and jobs. For example, during the recession, more new job matches are in very small firms, and the new workers are more experienced. The crisis led to a fall in the shares of construction and manufacturing jobs, implying a reduction of the proportion of male workers who are overrepresented in these sectors.

We modelled exits to three different destination states, for an observation window of three years. The results show strong pro-cyclicality of job-to-job transitions and the counter-cyclical nature of exits into unemployment (with benefits). Job-to-non-employment (including voluntary and involuntary unemployment) remains virtually constant over the business cycle. Job switching (typically supply driven) is more likely than (demand driven) exits to unemployment in a period of economic growth, but the opposite is true in the downturn.

Job exits to unemployment are the most worrying issue for policy purposes, because of their implications for unemployment, welfare, human capital accumulation, social exclusion, etc. Many workers in new job matches are vulnerable to becoming unemployed during the first few months of their new job, particularly during the crisis.

[17] The decomposition of the change in the survival probability for non-employment is not very meaningful, since this change is small and interpretation is hampered by the fact that non-employment combines several destination states that cannot be disentangled.

The individuals experiencing the largest increase in the probability to become unemployed are males, young workers (16-29), lower educated workers, Spanish-speaking immigrants, workers in manual occupations, and workers in small and medium-sized establishments, particularly in construction. A policy of providing low quality and temporary jobs would not be effective for these groups, who seem trapped in inferior and unstable jobs. It seems better to create facilities for productivity enhancing (on the job) training,[18] together with specific social protection measures.

The decline in job-to-job transitions during the downturn may reduce labour market efficiency and productivity growth. Workers with reduced job-to-job mobility in the recession period are males and immigrants, the youngest age groups, workers with low education level, and workers with manual occupations.

Finally, we found an increase in the chances of a transition to the third destination, "non-employed" found for males and young workers (16-29), Spanish speaking immigrants, those working in non-manual occupations, individuals without family responsibilities and workers in smaller establishments, particularly in construction. A limitation of our study is that this destination combines several different exits (unemployment without benefits, homemaker, emigration, etc.) that we cannot disentangle with our data.

The proportion of workers starting a new job in a very small establishment is larger in 2009 than in 2005. New job starters have more stable jobs in larger establishments, especially during the downturn. This seems relevant for the current policy debate on the necessity of stimulating firm growth in Spain, to increase productivity and employment stability. Policy should not only focus on creating new (small) firms but also stimulating these firms to grow and stabilize. Special subsidies for small firms or legal requirements that only apply to larger firms are examples of policies that hamper firm growth; instead, one can think of tax favouring steady employment growth and investment in workers' human capital.[19] In line with this, current policy proposals aim at boosting firms to enter into new emerging sectors. Our results show

[18] Dual programs for the unemployed already exist, combining employment and training in a training center (Royal Decree 1529/2012, of 9 November).

[19] Results of Almunia and Lopez-Rodriguez (2013) suggest that firm behavior is quite responsive to such tax incentives.

that during the crisis fewer new hires took place in high technology firms, while such jobs appear more stable than other new jobs.

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Appendix A

Table A1: Definitions of explanatory variables

Individual characteristics	
Male	1 if male
Age at the moment of exiting the current job	16-19; 20-24; 25-29; 30-34; 35-39; 40-44; 45-49; 50-55. It is a time varying covariate
Spanish native	1 if Spanish citizenship
Spanish-speaking immigrants	1 if immigrant comes from a Spanish-speaking country
Non-Spanish speaking immigrants	1 if immigrant comes from a non-Spanish-speaking country
Dummy children <4	1 if the individual has children younger than 4 years old. It is a time-varying covariate
Dummy children 4-15	1 if the individual has children between 4 and 15 years old. It is a time-varying covariate
Primary education	1 if none and elementary education level
Lower secondary	1 if lower secondary education level (middle school)
Upper secondary	1 if upper secondary education level (high school)
Post-secondary	1 if tertiary education level
Regional Unemployment rate	Quarterly unemployment rate by gender and region of residence (time-varying); source: Economically Active Population Survey (EPA). Time varying covariate
Current job spell variables	
Non-manual occupation	1 if non-manual occupation
Sector of activity	Manufacturing, construction and services
High Technology	1 if sector of activity is in high technology, according to the classification of industries by technology level of CNAE (1993 and 2009 for the 2005 and 2009 samples).
Type of contract	Permanent, on-call temporary, temporary, open-ended
Part-time coefficient	Hours worked as a fraction of full time work (1 in a full time job)
Temporary Agency	1 if the employment is signed through a temporary help agency
Size (of the establishment)	Number of employees, constructed using the firm identifier in the data. Establishments in different provinces always have different identifiers, but establishments in the same province may have the same identifier, in which case establishment size refers to all establishments with the same identifier. It is a time-varying variable.
Daily wage	Real annual wage (gross salary) divided by the number of days worked in the year by employer. To remove outliers, we have applied a filter in 1st and 99th percentile to this variable; time-varying
Public Sector	1 if the employer is Public Sector

Source: Own elaboration

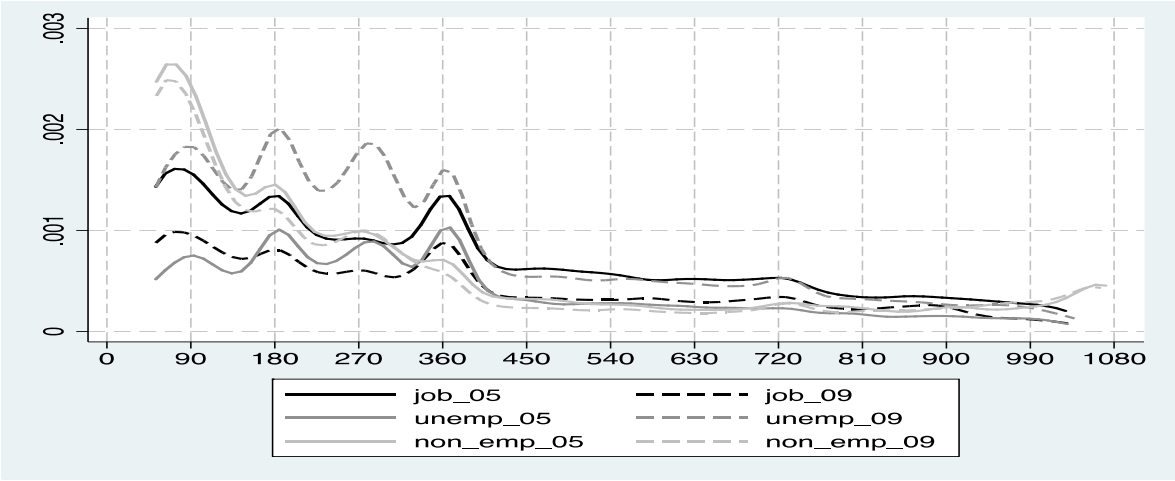
Note: Education level is constructed as a constant variable from the more recent LWLS given that from 2009 LWLS information for education level is more reliable.

Table A2: Sample selection

	Number of individuals	
Filters	**2005 sample**	**2009 sample**
Individuals starting any job spell in the year of reference between 16 and 53 years old	327,858	281,741
Drop individuals with lack of relevant information	233	0
Drop individuals from agriculture industry	44,638	43,747
After merging consecutive job spells, drop spells starting before the year of reference	19,134	16,631
Drop spells shorter than 32 days	25,241	28,977
Drop learning or apprenticeship contracts	4,478	6,382
Drop overlapping spells* and spells with inconsistent information	5,319	6,518
Drop spells because of missing information of current type of contract and salaries lower than the 1st percentile or higher than 99th percentile. Drop individuals from Ceuta and Melilla	52,396	38,333
Drop spells with missing firm size	6,276	3,877
Final sample (number of individuals)	**170,143**	**137,276**

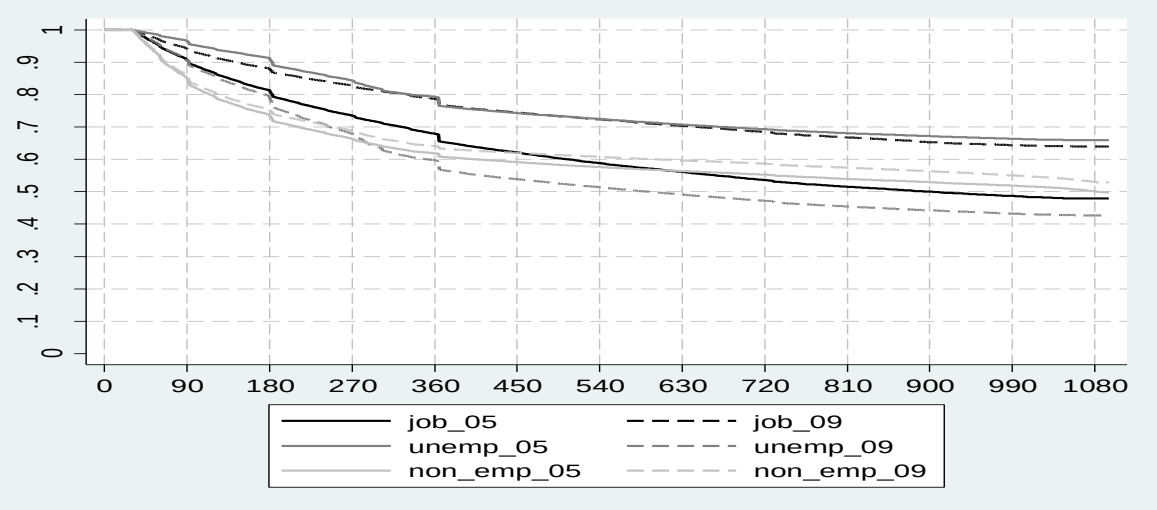
Source: Own elaboration from 2005-2007 LWLS and 2009-2011 LWLS.
Note: Data from fiscal module exclude information of Regime of household, individuals paying personal taxes in Basque Country and Navarra.
** The consecutive criteria applied to preserve spells corresponding to the main activity are: we keep the spells with 1) the highest part-time coefficient, 2) the longest spell, and 3) the highest contributory base. Remaining overlapping spells are removed.*

Figure A1: Kaplan Meier kernel hazard functions; exits from employment to other job, unemployment and non-employment. 2005 and 2009 samples. Durations in days



Source: Own elaboration from LWLS.

Figure A2: Kaplan Meier Survival estimates; Exits from employment to other job, unemployment and non-employment. 2005 and 2009 samples. Durations in days



Source: Own elaboration from LWLS.

Table 1: Definition of destination states

Destination states	Definition
Other job	Immediate job spell of at least 31 days within 31 days after the end of the job under study. It includes transitions to a new employer and self-employment.
Unemployment with benefits	Immediate unemployment benefit spell of at least 31 days of contributory and/or social assistance benefits within 31 days after the end of the job under study.
Non-employment state	Defined as the residual group. Includes unemployment without benefits, emigration, black economy and inactivity (for instance to care for family or to become a student). This state is identified if there is no subsequent job spell (of at least 31 days) and no spell with unemployment benefits (of at least 31 days) within 31 days after the end of the job under study.

Table 2: Descriptive statistics for the 2005 and 2009 samples

	2005		2009	
Variable	**Mean**	**Std. Dev**	**Mean**	**Std. Dev**
MACROECONOMIC VARIABLES				
Unemployment rate (quarterly)	0.09	0.04	0.20	0.05
Male unemployment rate (quarterly)	0.07	0.021	0.19	0.05
Female unemployment rate of (quarterly)	0.11	0.043	0.20	0.06
INDIVIDUAL CHARACTERISTICS				
Male (*)	0.54	0.50	0.51	0.50
Age at the year of starting the job spell	32	9.09	34	9.22
Nationality				
Spanish native (*)	0.89	0.31	0.85	0.36
Spanish speaking immigrant (*)	0.05	0.22	0.05	0.22
Non Spanish speaking immigrant (*)	0.06	0.23	0.10	0.30
Children<4 (*)	0.11	0.32	0.13	0.33
Children>3 & <16 (*)	0.20	0.40	0.22	0.42
Level of education				
Primary education (*)	0.18	0.39	0.19	0.39
Lower secondary (*)	0.40	0.49	0.40	0.49
Upper secondary (*)	0.25	0.43	0.24	0.43
Post-secondary (*)	0.16	0.37	0.16	0.37
JOB CHARACTERISTICS				
Non-Manual occupation (*)	0.41	0.49	0.42	0.49
Industry				
Construction (*)	0.18	0.38	0.15	0.36
Manufacturing (*)	0.11	0.32	0.08	0.27
Services (*)	0.71	0.45	0.77	0.42
High technology (*)	0.09	0.28	0.03	0.17
Establishment size				
Size 1 - 9 (*)	0.30	0.45	0.35	0.47
Size 10 - 19 (*)	0.12	0.32	0.12	0.32
Size 20 - 49 (*)	0.15	0.36	0.14	0.35
Size 50 - 249 (*)	0.20	0.40	0.20	0.40
Size 250 (*)	0.20	0.40	0.19	0.38
Type of contract				
Current contract is temporary (*)	0.64	0.48	0.62	0.48
Current contract is on-call temporary (*)	0.06	0.23	0.07	0.26
Current contract is open-ended (*)	0.03	0.17	0.05	0.23
Current contract is permanent (*)	0.27	0.44	0.25	0.43
Current contract is part-time (*)	0.22	0.41	0.28	0.45
Part-time coefficient	0.92	0.19	0.88	0.22
Temporary Help Agency (*)	0.04	0.20	0.03	0.18
Public Sector (*)	0.08	0.27	0.10	0.31
Real daily wage (euros in 2009) (**)	50	24.34	54	27.37

Notes: Descriptive characteristics corresponding to the first observation of each individual in each sample. (*) Dummy variables, (**) Real daily wages for full time Jobs. According to t-tests, all differences in means between both samples are statistically significant except for Lower secondary and Post-secondary school). Variable definitions are given in Table A1 (Appendix).

Source: Own calculations using LWLS and the Spanish Labour Force Survey (quarterly regional unemployment rate).

Table 3: Estimation results of correlated competing risks models with exits to another job, unemployment, and non-employment; 20055 and 2009 samples

a) Demographic characteristics

	2005			2009		
	Job	**Unemp.**	**Non-emp**	**Job**	**Unemp.**	**Non-emp**
Unemployment rate	-2.499***	2.207***	-0.399***	-0.738***	1.354***	-0.242**
	(0.157)	(0.170)	(0.129)	(0.129)	(0.0864)	(0.0965)
Male	0.0749***	-0.283***	-0.0506***	0.0512***	-0.116***	0.00865
	(0.0127)	(0.0160)	(0.0113)	(0.0147)	(0.0107)	(0.0110)
Age 6-19	-0.339***	-1.051***	0.832***	-0.515***	-0.839***	0.914***
	(0.0276)	(0.0533)	(0.0175)	(0.0580)	(0.0498)	(0.0236)
Age 20-24	-0.0533***	-0.230***	0.423***	-0.126***	-0.145***	0.451***
	(0.0137)	(0.0198)	(0.0123)	(0.0220)	(0.0170)	(0.0150)
Age 30-34	-0.0709***	0.0878***	-0.138***	-0.0627***	0.0366**	-0.185***
	(0.0135)	(0.0176)	(0.0141)	(0.0196)	(0.0145)	(0.0163)
Age 35-39	-0.168***	0.0893***	-0.161***	-0.129***	0.0546***	-0.202***
	(0.0159)	(0.0195)	(0.0163)	(0.0218)	(0.0154)	(0.0181)
Age 40-44	-0.252***	0.0778***	-0.159***	-0.161***	0.0819***	-0.217***
	(0.0180)	(0.0209)	(0.0178)	(0.0242)	(0.0164)	(0.0198)
Age 45-49	-0.368***	0.0570**	-0.260***	-0.219***	0.0911***	-0.245***
	(0.0204)	(0.0222)	(0.0199)	(0.0267)	(0.0171)	(0.0215)
Age 50-55	-0.509***	0.107***	-0.244***	-0.325***	0.0954***	-0.258***
	(0.0265)	(0.0260)	(0.0247)	(0.0326)	(0.0196)	(0.0256)
Spanish-speaking immigrants	0.167***	-0.317***	0.318***	0.00444	0.0158	0.323***
	(0.0204)	(0.0313)	(0.0195)	(0.0295)	(0.0202)	(0.0213)
Non-Spanish speaking immigrants	0.0704***	-0.102***	0.338***	0.0363	-0.106***	0.312***
	(0.0201)	(0.0270)	(0.0188)	(0.0224)	(0.0156)	(0.0164)
Children <4	-0.0251*	0.0839***	-0.00934	-0.0305	0.0744***	-0.0699***
	(0.0144)	(0.0174)	(0.0143)	(0.0197)	(0.0132)	(0.0161)
Children 4-15	-0.0125	0.0335**	-0.0674***	0.0334**	0.0541***	-0.110***
	(0.0127)	(0.0142)	(0.0126)	(0.0169)	(0.0109)	(0.0141)
Primary education	-0.0243*	0.0311**	0.0935***	-0.0433**	0.0866***	0.0193
	(0.0131)	(0.0150)	(0.0120)	(0.0192)	(0.0116)	(0.0140)
Upper secondary	-0.0215*	-0.139***	0.107***	0.0228	-0.141***	0.125***
	(0.0122)	(0.0152)	(0.0113)	(0.0173)	(0.0122)	(0.0130)
Post-secondary	0.0132	-0.482***	0.211***	0.0537**	-0.474***	0.142***

	(0.0155)	(0.0218)	(0.0137)	(0.0213)	(0.0174)	(0.0159)

Table 3, continued

b) Job characteristics

	2005			2009		
	Job	**Unemp.**	**Non-emp**	**Job**	**Unemp.**	**Non-emp**
Ln(size)	-0.0595***	-0.0614***	-0.00564**	-0.0937***	-0.0679***	-0.0320***
	(0.00278)	(0.00347)	(0.00241)	(0.00380)	(0.00277)	(0.00275)
Construction	0.00519	-0.191***	-0.0780***	-0.183***	0.329***	-0.0343
	(0.0228)	(0.0307)	(0.0236)	(0.0340)	(0.0209)	(0.0274)
Manufacturing	-0.0178	-0.0500	-0.00983	-0.0612	0.0783**	-0.128***
	(0.0329)	(0.0375)	(0.0312)	(0.0489)	(0.0313)	(0.0401)
Construction*ln(size)	-0.0296***	-0.0649***	-0.104***	0.0139	-0.0618***	-0.104***
	(0.00682)	(0.00948)	(0.00749)	(0.0119)	(0.00728)	(0.0104)
Manufacturing*ln(size)	-0.0994***	0.00624	-0.0841***	-0.0679***	-0.0231***	-0.0410***
	(0.00856)	(0.00936)	(0.00817)	(0.0135)	(0.00843)	(0.0110)
High technology	0.0918***	-0.121***	-0.0632***	0.0917**	-0.0592*	-0.123***
	(0.0174)	(0.0234)	(0.0170)	(0.0372)	(0.0306)	(0.0347)
Open-ended	-0.917***	0.702***	-0.353***	-0.896***	0.300***	-0.341***
	(0.0397)	(0.0216)	(0.0256)	(0.0422)	(0.0168)	(0.0230)
Permanent	-1.547***	-2.170***	-2.037***	-1.244***	-1.829***	-1.874***
	(0.0138)	(0.0219)	(0.0157)	(0.0185)	(0.0158)	(0.0178)
On call temporary	-0.141***	-0.291***	0.0702***	0.0300	-0.132***	0.225***
	(0.0233)	(0.0256)	(0.0194)	(0.0273)	(0.0197)	(0.0199)
Temporary Agency	1.033***	0.165***	0.317***	1.100***	0.226***	0.344***
	(0.0190)	(0.0311)	(0.0186)	(0.0292)	(0.0264)	(0.0241)
Public sector	-0.564***	0.199***	-0.0575***	-0.287***	0.166***	-0.0316*
	(0.0237)	(0.0221)	(0.0177)	(0.0265)	(0.0167)	(0.0179)
Ln(daily salary)	0.200***	0.160***	-0.221***	0.245***	0.0678***	-0.136***
	(0.0132)	(0.0160)	(0.0118)	(0.0172)	(0.0122)	(0.0125)
Part-time coefficient	0.0988***	0.693***	-0.612***	-0.150***	0.550***	-0.736***
	(0.0316)	(0.0389)	(0.0248)	(0.0393)	(0.0285)	(0.0266)

Table 3, continued

c) Terms of mass points

	2005			2009		
	Job	**Unemp.**	**Non-emp**	**Job**	**Unemp.**	**Non-emp**
V1	-0.527***	-0.0378	0.644***	-0.362***	0.0993***	0.438***
	(0.102)	(0.0505)	(0.0443)	(0.101)	(0.0204)	(0.0536)
V2	0.501***	0.160***	-0.106***	0.857***	0.0644	-0.370***
	(0.0289)	(0.0242)	(0.0406)	(0.0791)	(0.0421)	(0.0904)
a1	1.629***			2.554***		
	(0.155)			(0.134)		
a2	2.119***			1.899***		
	(0.114)			´(0.245)		
Observations	875,431	875,431	875,431	703,440	703,440	703,440
Log Likelihood	-1,221,927			-1,009,452		
Number of ids	170,143	170,143	170,143	137,276	137,277	137,278
Number of exits	58,031	33,726	68,391	28,219	55,755	48,631
Terms of mass points	**1**	**2**	**3**	**1**	**2**	**3**
Probability	35.36%	57.70%	6.94%	62.61%	32.52%	4.87%
V job	-0.53	0.50	1.48	-0.362	0.857	1.07
V unemployment	-0.04	0.16	1.14	0.0993	0.0644	1.71
V non-employment	0.64	-0.11	2.40	0.438	-0.370	3.16
Rho	**Job**	**Unemp.**		**Job**	**Unemp.**	
Unemployment	84%			36%		
Non-emp.	40%	37%		-12%	57%	

Notes:

Piecewise baseline and discrete distribution of unobserved heterogeneity with three mass points.

References categories: female, Native Spanish, secondary education level, manual occupation, Aged_25_29, services sector, temporary contract. Unemployment rate, establishment size and daily salary are continuous time-varying variables.

*According to Wald tests (t-tests on the differences), all differences between coefficients in the models for 2005 and 2009 are statistically significant except for high technology in job-to-job transitions and the interaction construction*ln(size) in job-to-non-employment transitions.*

*Significance levels: ***p<0.01, ** p<0.05, * p<0.1*

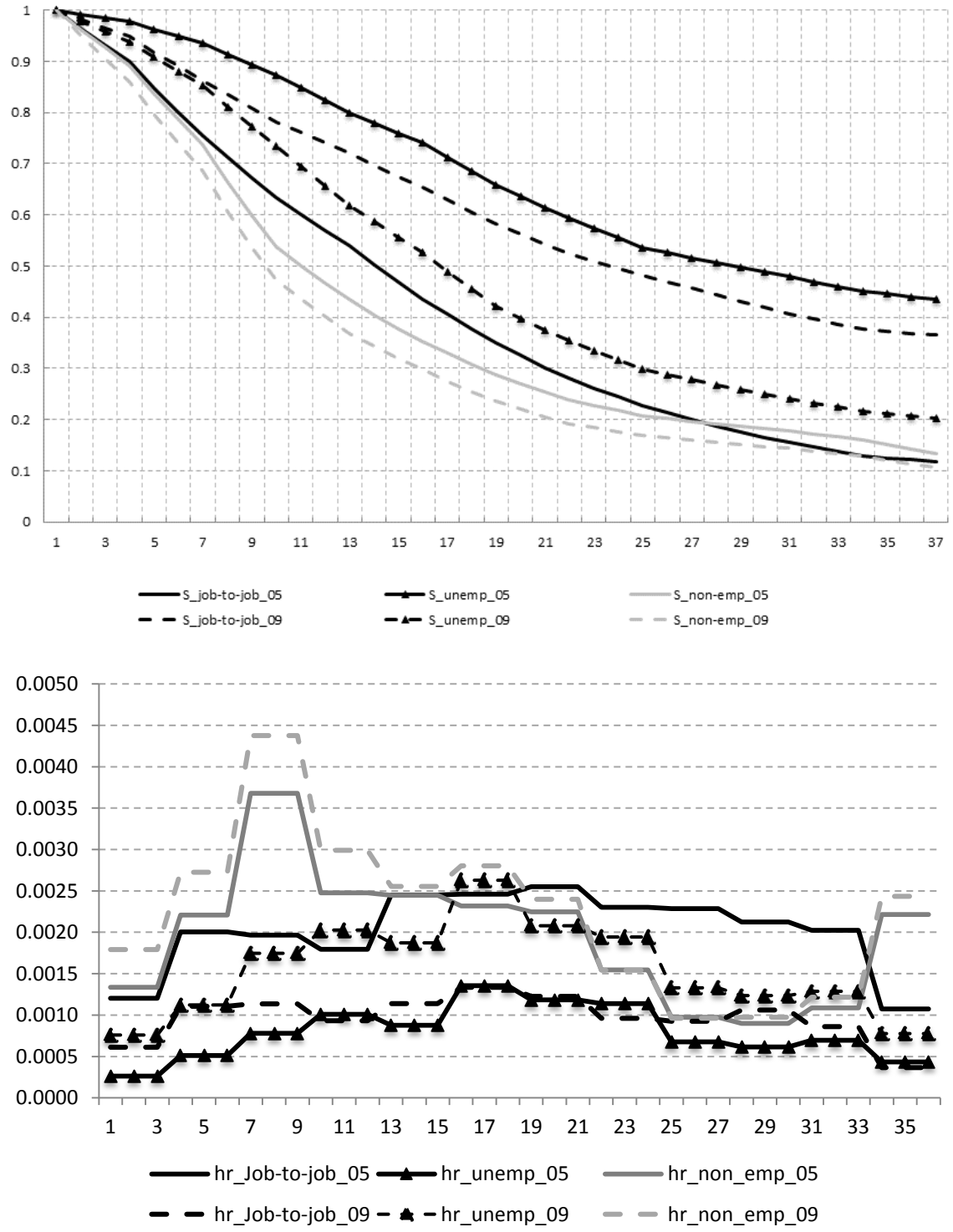
Table 4: Decomposition analysis for exits from the current job to other job, unemployment and non-employment

	Other job		Unemployment		Non-employment	
Total Effect	**10.70%**	**100%**	**-18.25%**	**100%**	**1.99%**	**100%**
$\overline{S^{09}_{09,09}}$	79.70%		63.94%		59.04%	
$S^{05}_{05,05}$	68.99%		82.19%		57.06%	
Composition effects	**2.55%**	**24%**	**-1.93%**	**11%**	**0.42%**	**21%**
Business cycle effects	**8.15%**	**76%**	**-16.32%**	**89%**	**1.56%**	**79%**

Note: Evaluated using the 2005 model. For notation, $\overline{S^{m}_{s,p}}$ is the average survival probability at month 12, under the model m (2005, 2009), for the sample s (2005, 2009), using the average regional unemployment rate of the period p (2005, 2009).

Source: Own elaboration from LWLS.

Figure 1: Survival functions (top panel) and hazard rates (bottom panel) benchmark person for job, unemployment and non-employment transitions; 2005 and 2009 samples; competing risks model



Note: Benchmark individual: male, lower secondary, non-manual occupation, native, 25-29 Aged, No children, services sector, Non-High-Technology, temporary contract, No through Temporary Help Agency, private sector. For continuous variables mean value is taken.